KOBRINSKIY, A.Ye.; KOLISKOR, A.Sh.; LEVKOVSKIY, Ye.I.; POPOV, V.Ye.; SERGEYEV, V.I.

Self-adjusting preset machine-tool control system. Vest. AN SSSR 35 no.9:52-56 '65. (MIRA 18:9)

1. Institut mashinovedeniya Gosudarstvennogo komiteta po mashinostroyeniyu pri Gosplane SSSR i AN SSSR.

POPOV, Ya. G.

"The Setting-up of Experimental Research in Flow Stations," Meteorology and Hydrology, Issue No. 4, Leningrad, December 1950.

Popov, Ya. N.

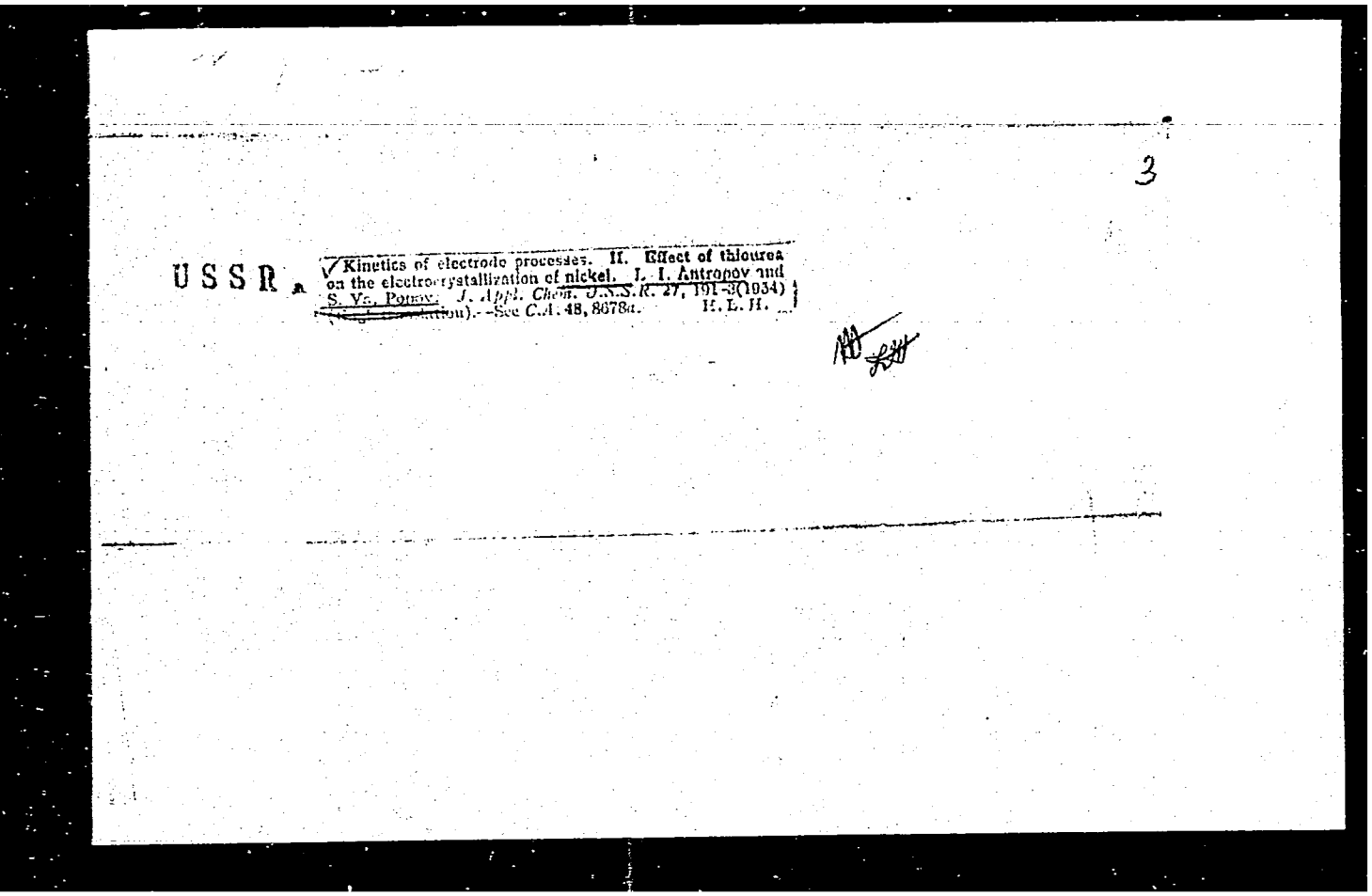
SHAL'NEV, V.G.; BIBIKOV, A.V., inzhener, retsenzent; LOBACHEV, P.V., inzhener; POLUEKTOV, Ye.V., inzhener, redaktor; SAKSAGANSKIY, T.D. redaktor; POPOV, Ya.N., redaktor; POPOVA, S.M., tekhnicheskiy redaktor.

[Safety measures and improvement of working conditions for hot press working of metals in forging and pressing shops] Tekhnika bezopasnosti i ozdorovlenie uslovii truda pri goriachei obrabotke metallov davleniem v kuznechno-pressovykh tsekhakh. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1955. 214 p. (MLRA 8:11)

(Forging--Safety measures)

KACHURIN, L.G.; POPOV, Ya.P.

Inertial characteristics of the transmitters of air current directions. Trudy Len. gidromet. inst. no.15:200-206 '63. (MIRA 17:1)



3

USSR

Kinetics of electrode processes. II. Effect of thiourea on the electrocrystallization of nickel. L. I. Antropov and S. Ye. Popov. *J. Appl. Chem. U.S.S.R.* 27, 191–3(1954) (in English).—See *C.A.* 48, 8678a. H. L. H.

POPOV, Ya. S.

A technical dictionary of the moving picture industry. Moskva, Kino-pechat', 1928. 137 p.

TKACH, Vasiliy Denisovich; ORENBOYM, Boris Danilovich; GURBAN, Vasiliy Yustinovich; YEREMENKO, Konstantin Prokof'yevich; POPOV, Ya.Ya., inzh., retsenzent; PELEVIN, N.N., inzh., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn.red.

[E-153, E-153A, and E-153ASh hydraulic excavators; a manual on their maintenance and operation] Gidravlicheskie ekskavatory E-153, E-153A, E-153ASh; rukovodstvo po ukhodu i ekspluatatsii. Moskva, Mashgiz, 1963. 160 p.
(MIRA 16:6)

(Excavating machinery)

POPOV, Yakov Savel'yevich. Prinimali uchastiye: GINTSBURG, M.G.; MOROZ, R.P.; SILKIN, A.N.; SEDOV, A.V., red.; MANINA, M.P., tekhn. red.

[Handbook for a motorcycle driver] Sputnik mototsiklista. Moskva, Fizkul'tura i sport, 1963. 319 p. (MIRA 17:2)

POPOV, Ye.

"Hastening the fruit bearing of the vine", p 147 (KOOPERATIVNO ZEMEDELIE. Vol 6 #4, Apr. 1951, Bulgaria)

SO: Monthly List of East European Accessions, Vol 2 #8 Library of Congress, August 1953, Uncl.

POPOV, Ye.

Nelineinye Zadachi Statiki Tonkikh Sterzhnei (Non-Linear Problems of Statics in Thin Rods)

170 p. 1.00

SO: Four Continent Book List, April 1954

POPOV, Ye.

Improvements are called for in the Northern Dvina Delta.
Rech. transp. 20 no.10:45-46 O '61. (MIRA 14:9)
(Northern Dvina Delta--Hydraulic engineering)

[illegible]/Cultivated Plants. Commercial. Oil-bearing. Sugary.

Abs Jour: Ref Zhur-Biol., No 5, 1958, 20423.

Author : Ye. Popov
Inst : Not given.
Title : Improvement of the Technological Properties of Sugar Beets Through Seed Stimulation. (Uluchsheniye tekhnologicheskikh svoystv sakharnoy svekly s pomoshch'yu stimulyatsii semyan.)

Orig Pub: Dokl. Bolgar. AN., 1956, 9, No 3, 61-64.

Abstract: The pre-sowing maceration of sugar beet seeds in solutions of hydroquinone and potassium bromide caused an increase in saccharinity and dry matter by 2%. The overall harvest was augmented on the average by 10%. The tests were run under production conditions during 4 years in diverse sugar beet growing areas of Bulgaria.

Card : 1/1

POPOV, Ye.

BULGARIA/Cultivated Plants - Fruits and Berries. M-5

Abs Jour : Ref Zhur - Biol., No 3, 1958, 11021

Author : Lilov, D., Popov, Ye.

Inst : Scientific Research Institute of Viticulture and Wines, Pleven.

Title : Using Stimulation to Increase the Percentage of First-Class Grafted Grapevines.

Orig Pub : Izv. In-ta biol. B"lg. AN, 1956, 7, 41-51

Abstract : Treating the cuttings of the grape grafting components with a 2%, 3%, or 4% hydroquinone solution for 15 hours increased the yield of first-class seedlings by 23%. The experiment took place in the Scientific Research Institute of Viticulture and Wines in the city of Pleven.

Card 1/1

24

POPOV, Ye., kapitan 2 ranga

How to swim in storm waves. Voen. znan. 39 no.8:30 Ag '63.
(MIRA 16:8)

(Swimming)

POPOV, Ye.

Issuing credit to interfarm building organizations. Sel'. stroi. 17 no.4:13-14 Ap '63. (MIRA 16:7)

1. Nachal'nik otdela kreditovaniya kolkhozov Rossiyskoy respublikanskoy kontory Gosudarstvennogo banka SSSR.
(Collective farms--Interfarm cooperation)
(Construction industry--Finance)

POPOV, Ye., starshiy leytenant, voyennyy letchik tret'yego klassa

On the romantic quality of flights, initiative and common sense.
Av.i kosm. 46 no.6:52-53 Je '63. (MIRA 16:8)
(Flight training)

BULGARIA/Cultivated Plants - Technical, Oil, and Sugar Plants. M-4

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10928

Author : Popov, Ye.

Inst : Institute of Biology, Academy of Sciences Bulgaria

Title : Using Stimulation to Increase the Content of Sugar and Dry Matter in Sugar Beet.

Orig Pub : Izv. In-ta biol. B"lg. AN, 1956, 7, 85-93

Abstract : Experiments conducted in 1951-1954 in various regions of Bulgaria have demonstrated that treating sugar beet seed with potassium bromide, hydroquinone, and also dey hexochlorane preparations and mixtures of hydroquinone with potassium bromide and other substances increased the root yield by an average of 10%. The sugar content increased by 2.7-8.2%, and the content of dry matter --

Card 1/2

Popov, YE.

USSR/Chemical Technology. Chemical Products and Their Application -- Treatment of solid mineral fuels, I-12

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5472

Author: Popov, Ye., Smirnov, A.

Institution: Leningrad Mining Institute

Title: Investigation of the Correlation Between Specific Gravity and Content of Organic Matter in the Case of Shale of Gdovsk Deposit

Original Publication: Sb. nauch. rabot studentov Leningr. gorn. in-ta. Geol., gornoye delo, L., Izd-vo un-ta, 1954, 109-114

Abstract: To work out a simplified method for determining the quality of shale, based on correlation between specific gravity and content of organic matter, 50 samples of shale were collected at mine No 1 of the Gdovsk deposit. On determination of content of organic matter and specific gravity in kerosene (according to Mendeleyev) it was found that specific gravity is an inverse function of the content of organic matter. By graphic methods there was derived the empirical formula

Card 1/2

POPOV, Ye., inzh.

Inspection of jets and pump and injector units during their operation. Avt.transp. 39 no.4:17-19 Ap '61. (MIRA 14:5)
(Fuel pumps--Testing) (Diesel engines--Fuel systems)

POPOV, Ye.

Economizing money and materials. Sel'.stroi. 14 no.6:3-4 Je '59. (MIRA 12:9)

1. Ekonomist Sel'khozbanka SSSR.
(Building materials)

POPOV, Ye.A.

Effect of beach icing and shore ice on seashore dynamics. Trudy Okean.kom. 4:109-112 '59. (MIRA 13:4)
(Black Sea--Beach erosion)
(Ice on rivers, lakes, etc.)

POPOV, Ye., inzh.

Pneumatic device for testing pump and injector atomizers and carburetor jets. Avt.transp. 40 no.4:22-24 Ap '62. (MIRA 15:4)

(Pneumatic gauges)

POPOV, Ye.A., kand.tekhn.nauk

Extrusion with thinning of walls. [Trudy] MVTU no.13:60-70 '51. (MIRA 12:7)

(Extrusion (Metals))

Name:	POPOV, Yevgeniy Aleksandrovich
Dissertation:	General theory of the form-changing operations of leaf stamping with axial symmetry of deformation
Degree:	Doc Tech Sci
Affiliation:	/Not indicated/
Defense Date, Place:	8 Jun 56, Council of Moscow Order of Lenin and Order of Labor Red Banner Higher Tech School imeni Bauman
Certification Date:	16 Mar 57
Source:	BMVO 13/57

BLYUMKIN, L.P.; POPOV, Ye.A.

The EF-2M electronic fluorimeter. Priborostroenie no.12:30 D'63. (MIRA 17:5)

NIKOLAYEV, I.I., otv. red.; POPOV, Ye.A., otv. red.

[Lakes of the Karelian Isthmus; limnology and research methods] Ozera Karel'skogo peresheika; limnologiia i metodika issledovanii. Moskva, Nauka, 1964. 158 p.
(MIRA 17:9)

1. Leningrad. Universitet. Laboratoriya ozerovedeniya.

POPOV, Ye.A., kandidat tekhnicheskikh nauk.

Distribution of deformation in drawing sheet metals. [Trudy] VMTU no.40:37-58 '55. (MLRA 9:8)
(Deep drawing (Metalwork))

POPOV, Ye.A., kandidat tekhnicheskikh nauk.

Stress and deformation distribution in flanging round holes.
[Trudy] MVTU no.40:59-72 '55. (MLRA 9:8)
(Sheet-metal work)

POPOV, Ye.A., kandidat tekhnicheskikh nauk.

The problem of the distribution of stress in the drawing of box pattern parts. [Trudy] MVTU no.42:16-20 '55. (MLRA 9:5)
(Strains and stresses) (Drawing (Metalwork))

GLADILIN, Anatliy Nikolayevich, kandidat tekhnicheskikh nauk; DUBININ, Nikolay Petrovich, kandidat tekhnicheskikh nauk; ZHEVTUNOV, Petr Prokhorovich, kandidat tekhnicheskikh nauk; KRASAVIN, Vasiliy Stepanovich, kandidat tekhnicheskikh nauk; NAZAROV, Sergey Tikhonovich, kandidat tekhnicheskikh nauk; PANCHENKO, Konstantin Petrovich, kandidat tekhnicheskikh nauk; POPOV, Viktor Aleksandrovich, kandidat tekhnicheskikh nauk; POPOV, Yevgeniy Aleksandrovich, kandidat tekhnicheskikh nauk; RASTORGUYEV, Ivan Sergeyevich, kandidat tekhnicheskikh nauk; STOROZHEV, Mikhail Vasil'yevich, kandidat tekhnicheskikh nauk; KONSTANTINOV, L.S., kandidat tekhnicheskikh nauk, redaktor; ROZENBERG, G.A., kandidat tekhnicheskikh nauk, redaktor; MODEL', B.I., tekhnicheskiy redaktor

[Technology of metals] Tekhnologiia metallov. Pod red. N.P.Dubinina. Izd. 2-oe. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 550 p. (MLRA 9:8)

1. Prepodavateli Moskovskogo Vyschego tekhnicheskogo uchilishcha im. Baumana (for Gladilin, Dubinin, Zhevtunov, Krasavin, Nazarov, Panchenko, Popov, V.A., Popov, Ye.A., Rastorguyev, Storozhev)
(Metallurgy) (Metalwork)

STOROZHEV, Mikhail Vasil'yevich; POPOV, Yevgeniy Aleksandrovich; UNKSOV, Ye.P., doktor tekhn.nauk, prof., retsenzent; OVCHINNIKOV, A.G., red.; MODEL', B.I., tekhn.red.

[The theory of using pressure in metalwork] Teoriia obrabotki metallov davleniem. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 323 p. (MIRA 11:1)
(Metalwork) (Forging)

POPOV, Ye.

Sea raven. IUn. nat. no.1:36 Ja '62. (MIRA 15:1)
(Ravens)

SOV/137-58-7-14828

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 128 (USSR)

AUTHOR: Popov, Ye.A.

TITLE: Analysis of the Operation of Drawing a Billet on a Mandrel (Analiz operatsii razdachi zagotovki)

PERIODICAL: V sb.: Mashiny i tekhnol. obrabotki metallov davleniyem (MVTU, 79). Moscow, Mashgiz, 1957, pp 42-61

ABSTRACT: The analysis is pursued in 2 directions: 1) for a method of drawing by compression, in which a part of the billet (B) that is not to be deformed rests on a plate (meridional stress: compressive); 2) for a method of tensile drawing: the B is mounted by means of a flange previously made (meridional stress: tensile). Formulas for calculation permitting determination of the stresses operative in the critical section of the B are determined. Formulas are adduced for determining the magnitude of the drawing stress $\sigma_{r\,max}$ for either variant. The formulas take into consideration the effects of the following parameters on the drawing stress: coefficient of friction, radius of rounding of the punch, bending during deformation, and changes in wall thickness. The formulas were verified by

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SOV/137-58-7-14828

Analysis of the Operation of Drawing a Billet on a Mandrel

a series of experiments, and the results are reflected in accompanying graphs of the dependence of $\sigma_{r\ max}$ upon lubrication, shape of the tool, the clamping radius of the working edge, and ratio of the punch radius to the thickness of the billet walls.

I.G.

1. Metals--Processing

Card 2/2

137-58-6-12217

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 149 (USSR)

AUTHOR: Popov, Ye.A.

TITLE: Employment of Engineering Methods in the Design of Optimum Conditions of Deformation (Primeneniye inzhenernykh metodov rascheta dlya opredeleniya optimal'nykh usloviy deformirovaniya)

PERIODICAL: V sb.: Inzhenern. metody rascheta tekhnol. protsessov obrabotki metallov davleniyem. Moscow-Leningrad, Mashgiz, 1957, pp 111-122

ABSTRACT: Justification is presented for the possibility of deriving a unified theory of equilibrium for all forming operations in the forging of sheet. Equations are derived for determining the magnitude of the stresses operative in the locus of deformation, with allowance for the effect of friction at the contact surfaces and for the geometry of the tool. The formulas for analysis thus derived make it possible to analyze the effect of the configuration and dimensions of the working tool on the distribution of stresses in the locus of deformation and to seek optimum conditions for deformation. I.G.

Card 1/1 1. Metals--Deformation 2. Tools--Design

POPOV, Ye.A., kand.tekhn.nauk.

Analyzing the preparatory shaping of billets. [Trudy] MVTU no.79:42-61 '57. (MIRA 11:1)
(Deformation (Mechanics))

GUBKIN, Sergey Ivanovich [deceased]; ZVORONO, Boris Pavlovich; KATKOV, Vasiliy Fedorovich; NORITSYN, Ilariy Anatol'yevich; POPOV, Yevgeniy Aleksandrovich; SMIRNOV-ALYAYEV, Georgiy Aleksandrovich; TOMLENOV, Aleksandr Dmitriyevich; UNKSOV, Yevgeniy Pavlovich; SHOFMAN, Leopol'd Adol'fovich; STOROZHEV, Mikhail Vasil'yevich, red.; MODEL', B.I., tekhn.red.

[Basic theories in the pressworking of metals] Osnovy teorii obrabotki metallov davleniem. Pod red. M.V.Storozheva. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 528 p. (MIRA 12:9)

(Sheet-metal work) (Deep drawing (Metalwork))

DUBININ, Nikolay Petrovich, kand.tekhn.nauk; ZHEVTUNOV, Petr Prokhorovich, kand.tekhn.nauk; STOROZHEV, Mikhail Vasil'yevich, kand.tekhn.nauk; POPOV, Yevgeniy Aleksandrovich, kand.tekhn.nauk; NAZAROV, Sergey Tikhonovich, kand.tekhn.nauk; GLADILIN, Anatoliy Nikolayevich, kand.tekhn.nauk; KRASAVIN, Vasiliy Stepanovich, kand.tekhn.nauk; PANCHENKO, Konstantin Petrovich, kand.tekhn.nauk; POPOV, Viktor Aleksandrovich, kand.tekhn.nauk; RASTORGUYEV, Ivan Sergeyevich, kand.tekhn.nauk [deceased]; SHEMSHURINA, Ye.A., red.izd-va; UVAROVA, A.F., tekhn.red.; MODEL', B.I., tekhn.red.

[Technology of metals] Tekhnologiia metallov. Pod red. N.P. Dubinina. Izd.3. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1959. 564 p. (MIRA 13:7)

1. Prepodavateli Moskovskogo vysshego tekhnicheskogo uchilishcha imeni N.Ye.Baumana (for all except Shemshurina, Uvarova, Model').
(Metals) (Metalwork)

Ye. A.

SOV/122-58-5-25/26

AUTHOR: Podurayev, V.N., Candidate of Technical Sciences, Dotsent

TITLE: Inter-Vuz Conference on Technology
(Mezhvuzovskaya tekhnologicheskaya konferentsiya)

PERIODICAL: Vestnik Mashinostroyeniya, 1958, Nr 5, p 84 (USSR).

ABSTRACT: An inter-vuz conference took place in January, 1958 at the MVTU (Moscow Technical University) imeni Bauman, devoted to manufacturing problems in the engineering and instrument industries. 22 universities and representatives of research institutes in the main engineering and instrument branches took part. Over 50 papers were read. The following papers were devoted to the state of knowledge of the theoretical foundations of production engineering. "The Basic Trends of Development in Engineering Manufacture" by Satel Ye.A., "The Fundamental Theoretical Problems in the Development of Casting", by Rubtsov, M.N., "Current Problems of Metallurgy and Heat Treatment of Metals" by Sidorin, I.I., Professor, "Accuracy and Interchangeability in Engineering" by Prof. B.S. Balakshin and "Present State of the Theory of Plastic Deformation in Press-forming Manufacture" by Ye.A. Popov, Doctor of Technical Sciences. In these papers, the main attention was devoted to

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manufacturing methods which could be performed by small, light, universal and economic plants. New production methods capable of improving the life of machine components are needed. The trends of increasing power of machine tools, greater expansion of high-speed manufacturing processes and the need to ensure the greatest precision in manufacture were emphasized. The theory of interchangeability of machine components requires further development primarily in its application to pneumatic, hydraulic and electrical elements. In several papers, the inadequate use made in the theory of manufacturing methods of modern achievements in science was deprecated. Further developments in the several branches of engineering science needed in connection with topical manufacturing problems were indicated. Widespread automation and overall mechanisation of manufacture were discussed in the following papers: "Trends of Development in Automatic Welding" by Nikolayev, G.A., Professor, Corresponding Member of the Academy of Architecture and Building
"The Automation of Manufacturing Processes in Engineering" by Prof. G.A. Shaumyan, "The Part Played by Electronics in the Solution of Automation Problems" by Kugushev, A.M., Professor, "The Configuration and Classification of Automatic Production

Machines and Their Basic Elements" by Prof. S.I. Artobolevskiy, "The Basic Trends of Development in the Theory of Automatic Regulating and Control" by Solodvnikov, A.V. Professor, "The Application of Electronic Devices to the Programme Control of Metal Cutting Machine Tools" by B.V. Anisimov. In the present state of its development, automation must ensure not only an increased productivity of labour but also a high accuracy in the performance of its individual operation and the constancy of its properties in time. Problems of the evaluation of the economic effectiveness of introducing any form of automation under given manufacturing conditions must be further elucidated. The flexibility of automated production should be given attention. The problems set by these developments must be solved to an increasing degree by the methods of automatic electronic regulating and control and by programme control systems.

 1. Industrial Production--USSR 2. Engineering--USSR 3. Instruments --Production

L 19918-63 EWP(k)/EWP(q)/EWT(m)/BDS/EWP(B)--AFFTC/ASD--Pf-4--JD/HW

ACCESSION NR: AP3006051 S/0182/63/000/008/0018/0021

AUTHORS: Popov, Ye. A.

TITLE: Analysis of the extrusion process with flange heating

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 8, 1963, 18-21

TOPIC TAGS: extrusion, flange heating, analysis

ABSTRACT: The method of extruding with heating of the flange has been applied formerly to magnesium alloys only in order to increase the plasticity of a metal with a hexagonal lattice. At the present time it is applied to metals that are plastic at room temperature. The rapid heating of flange increases the degree of metal deformation. The usual explanation of this fact states that the flow limit magnitude of metal at the cross section under great stress exceeds that in the flange, and that, therefore, a sheet stock with a wide flange can be pressed into the die. However, this does not explain the sudden increase of the drawing coefficient past the value of the ideal coefficient. It has been assumed that the sudden increase was due to a nonuniform distribution of the flow limit values in the flange (the flow limit magnitude decreases uniformly in the direction from the

Card 1/2

L 19918-63
ACCESSION NR: AP3006051

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die to the external diameter of the stock). The effect of the nonuniform distribution of flow limit values in the flange on the magnitude of the ultimate deformation was analytically determined. The analysis showed that if the decrease in flow limit values in the flange (in the direction away from the die edge) follows the hyperbolic law, the values of the drawing coefficient will be greater than if it followed the linear law. Orig. art. has: 13 formulas.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 16Sep63	ENCL: 00
SUB CODE: ML	NO REF SOV: 003	OTHER: 000

Card 2/2

EWT-2/EWT(1)/EWP(t)/ETI/EWP(k) IJP(c) JGS/JD/RW

ACC NR: AP6028389 SOURCE CODE: UR/0182/66/000/006/0002/0009

AUTHOR: Popov, Ye. A.; Bocharov, Yu. A.; Polyak, S. M.; Stolbunov, A. S.; Raykh, D. B.; Legchilin, A. I.

60
59

ORG: none

TITLE: Deformation of metal by a pulsed magnetic field. Part II. Features of the mechanism of deformation of a blank in a pulsed magnetic field

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 6, 1966, 2-9

TOPIC TAGS: high speed cine camera, capacitor, pulsed magnetic field, metal deformation/SFR-2M high-speed cine camera, IM-5-150 capacitor

ABSTRACT: The pulsed, intermittent nature of the application of the magnetic field causes the forces of inertia to affect greatly the process of deformation and, in particular to cause plastic deformations in the blank after the load is no longer applied. Hence the process of deformation by means of a pulsed magnetic field (PMF) may be separated into an active and a passive stage. To elucidate the mechanism of PMF deformation and the features of the kinematics of change in shape of the billet, this process was investigated with the aid of a SFR-2M

UDC: 621.7.044

Card 1/3

high-speed motion picture camera with respect to a flat blank being drawn and formed in a ring die by means of 10- and 40-kilojoule devices based on IM-5-150 capacitors with a minimum discharge time of 10^{-6} sec. The kinograms thus obtained were used to construct curves of the displacements of individual points on the initially flat blank in time. Findings: during the initial stage of deformation the axial displacement of elements of the central part of the blank is smaller than that of the elements located closer to the die edge. During the later stages of deformation, however, the elements of the central part get additionally accelerated, overtaking the elements of the peripheral part of the blank. This is attributable to radial non-uniformity of the intensity of the magnetic field and it engenders plastic deformations in these elements; the plastic deformation continues until its work absorbs the difference between the kinetic energies of central and peripheral elements of the blank, or until the displacement rates of these elements get equalized. In addition, it is established that, all other things being equal, the increase in pulse energy leads to an increase in the height of the forging, while at the same time local convexity in the central part of the forging also increases. PMF forming of metals with low electrical conduction can result in much greater heights of the forgings if the inductor-facing surface of the blank is coated with a metal with high electrical conduction. It is further experimentally established that PMF forming can be used to perform assembling-joining operations if a cylindrical conductor is employed; thus, e.g. it can be used to produce more compact sheathed multicore cable. These are not the only applications of PMF. It is clearly ne-

ACC NR: AT5023389

0

cessary to further investigate the possibilities of this new forming technique. Orig. art. has: 9 figures, 5 formulas

SUB CODE: 11,20,14/ SUBM DATE: none/ ORIG REF: 002

Card 3/3 nst

L 36128-66 EWT(m)/EWP(k)/EWP(t)/ETI IJP(c) JD/HW

ACC NR: AP6016575 (A) SOURCE CODE: UR/0182/66/000/005/0001/0007 71 6

AUTHOR: Popov, Ye. A.; Bocharov, Yu. A.; Polyak, S.M.; Stolbunov, A. S.; Raykb, D. B.; Legchilin, A. I.

ORG: none

TITLE: Metal forming by means of a pulsed magnetic field. Part. 1. Nature of process and equipment 18

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 5, 1966, 1-7

TOPIC TAGS: pulsed magnetic field, metal forming, die, electric energy conversion

ABSTRACT: Metal forming by means of a pulsed magnetic field (PMF) is based on the conversion of the electric energy accumulated in the storage element during discharge via an inductor, to the energy of a pulsed magnetic field which creates the pressure shaping the metal blank. In this connection, the authors present formulas for determining the electric and magnetic parameters of the process. It is shown that the efficiency of PMF used in the forming of sheet metal ranges from 10 to 40%. There exist several techniques of PMF metal forming, as illustrated in Fig. 1: a) reduction of tube diameter by means of an inductor surrounding the tube (Fig. 1, a); b,c) flaring of the tube end by means of an inductor located within the tube (Fig. 1, b) with placement of die outside the tube in order to prevent the flaring of the remainder of

UDC: 621.7.044

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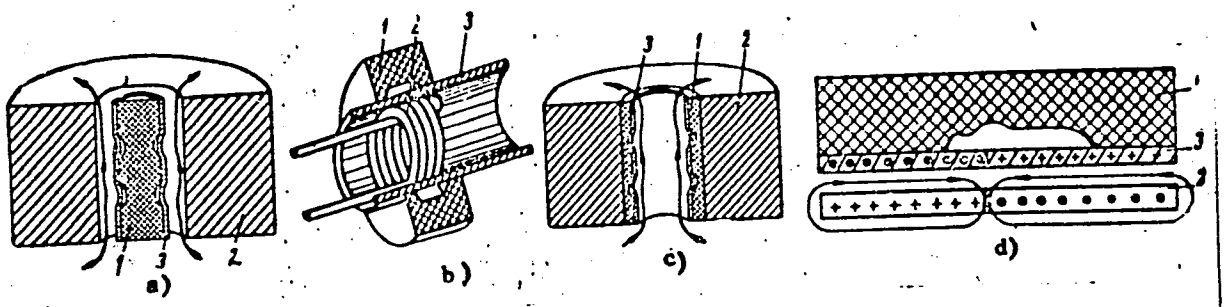


Fig. 1. Techniques of metal forming by means of PMF

1 - die (mandrel); 2 - inductor; 3 - blank

the tube after the field reaches a certain value (Fig. 1, c); d) sheet-metal forming by means of flat inductors (Fig. 1, d). In addition, PMF devices employing flat inductors may be used to blank and pierce metals, to assemble permanent connections, to

straighten plane and curved surfaces, and to shape metal located within a chamber, housing or shell consisting of dielectric materials. These devices consist of five principal components: charger (high-voltage rectifier), power storage element (capacitor banks), discharger-switch (arc discharger), igniter (thyratron), and forming element (working inductor and die or mandrel along with attachments for clamping the blank). The specifications of a Soviet-built PMF metal-forming installation, include: supply voltage, 230 v; mean discharge current, 15 a; maximal energy stored in capacitor bank, 7.2 kilo-joules; maximum electromagnetic pressure exerted on blank, 6400 kg/cm^2; time per cycle, 2 min; pulse time (half-period time), (40-50) 10^{-6} sec; maximum diameter of blank, 140 mm; dimensions of PMF installation, 1200x700x1500 mm. The second part of this investigation, which describes the mechanism of plastic deformation by means of PMF, will be published in the next issue of the same journal. Orig. art. has: 10 figures, 21 formulas.

SUB CODE: 13,20,11,09/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 001/

Card 3/3

POPOV, Ye.A., doktor tekhn.nauk,prof.

Forming calculations in sheet-metal working operations. Trudy MVTU no.111:138-152 '64. (MIRA 17:9)

L 10804-65 EWT(1)/EWG(v) Po-4/Pe-5/Pq-4/Pg-4 AFTC(a)/AFWL/SSD/ESD/ESD(dp)/AFMDC/ASD(a)-5/ASD(d) GW

ACCESSION NR: AP4041177 S/0049/64/000/006/0801/0818

AUTHOR: Popov, Ye. I.; Sukhodol'skiy, V. V.

TITLE: Stand-testing of marine gravimetric instruments

SOURCE: AN SSSR. Izv. Seriya geofizicheskaya, no. 6, 1964, 801-818

TOPIC TAGS: gravity measurement, sea gravity, gravimeter, accelerometer, marine gravimetric instrument

ABSTRACT: The authors describe briefly a test stand for marine gravimetric instruments and summarize the results of the first tests of horizontal and vertical accelerometers, long-period pendulums, a model of a submarine pendulum device, and strongly damped gravimeters. Data of practical importance were obtained concerning the quality of gravity-measuring instruments on a moving base. The main results of these tests are summarized as follows: 1) strongly damped gravimeters of the GAL-S, GAL-P, and G_{ss}-2 types are suitable for marine observations with precision of the order of ±1—2 milligals, either suspended in gimbals or mounted on a hydrostabilizing base in cases of disturbing accelerations up to 50 gals; 2) the effect of disturbing accelerations

Card 1/2

L 10804-65
ACCESSION NR: AP4041177

and inclinations on gravimetric instruments suspended in gimbals caused by friction or faults in their axes or the external action of damping devices may be compensated for; 3) the precision of horizontal accelerometers in the RNU and RUG instruments was estimated, and their suitability as auxiliary instruments for gravimetric observations was confirmed. Orig. art. has: 5 figures and 10 tables.

ASSOCIATION: Institut fiziki Zemli, Akademiya nauk SSSR (Institute of Physics of the Earth, Academy of Sciences SSSR)

SUBMITTED: 23Sep63 ATD PRESS: 3115 ENCL: 00

SUB CODE: ES NO REF SOV: 000 OTHER: 000

Card 2/2

POPOV, Yevgeniy Aleksandrovich, doktor tekhn. nauk, prof.;
ROMANOVSKIY, V.P., prof., red.

[Analysis of factors affecting the magnitude of the permissible drawing coefficient for axisymmetric parts] Analiz faktorov, vliiaiushchikh na velichinu dopustimogo koeffitsienta vytiazhki osesimmetrichnykh detalei. Leningrad, 1964. 11 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Goriachaia i kholodnaia obrabotka metallov davleniem, no.4)
(MIRA 17:7)

POPOV, Ye.A.

Physicogeographical characteristics of the skerry section of Lake Ladoga. Trudy Lab. ozeroved. 12:5-24 '61. (MIRA 15:3)
(Ladoga Lake region--Physical geography)

POPOV, Ye.A., kapitan 2-go ranga

Coral reefs and lagoons. Mor. sbor. 46 no.5:28-31 My '63.(MIRA 17:1)

POPOV, Ye.A., (Leningrad)

Let's stop the bogging up of the Colchis. Priroda 52 no.9: 56-57 '63. (MIRA 16:11)

POPOV, Ye.A., doktor tekhn. nauk, prof.

Theory of the bending of a wide strip. Vest. mashinostr. 43 no.10:58-60 O '63. (MIRA 16:11)

POPOV, Ye.A. (Leningrad); SAVEL'YEV, V.I. (Leningrad)

Choosing the route of a submarine line. Stroi. truboprov. 8 no.6:24-27 Je '63. (MIRA 16:7)

(Underwater pipelines—Surveying)

NEMILENTSEV, V.I.; POPOV, Ye.A.; SOKOLOV, V.Ye.

Transducer of an electromagnetic flowmeter withstanding a temperature up to 150°C. Trudy VKNII no.16:15-17 '62. (MIRA 16:5)
(Flowmeters)

POPOV, Ye. A. DECEASED 1963/1

c. 1962

PSYCHIATRY

See ILC

Tapar, Ye A.

PHASE I BOOK EXPLOITATION SOV/3955

Moscow. Vysshaye tekhnicheskoye uchilishche

Mashiny i tekhnologiya obrabotki metallov davleniyem; sbornik statey (Machinery and Processes for the Pressworking of Metals; Collection of Articles) Moscow, Mashgiz, 1960. 240 p. (Series: Its: Trudy, vyp. 98) Errata slip inserted. 3,500 copies printed.

Ed.: A.I. Zimin, Doctor of Technical Sciences, Professor; Ed. of Publishing House: O.V. Chernyak; Tech. Ed.: T.P. Lyskolova; Managing Ed. for Literature on Heavy Machine Manufacturing (Mashgiz): S.Ya. Golovin, Engineer.

PURPOSE: This collection of articles is intended for workers in scientific research institutions and in die-forging shops, and for engineering students.

COVERAGE: The book contains papers from the Department of Machines and Processes for the Pressworking of Metals of the MVTU (Moscow Higher Technical School imeni N.E. Bauman). The papers deal with theoretical and practical aspects of metal pressworking and with the theory and practice of forging machine and press design. These papers deal with machine hydraulics (selection of drives of presses, pressure in cylinders). A design of a hydraulic power-screw type "press-hammer," which can work as a percussion press or forging press is presented. Problems of the theory of plastic deformation in forging, upsetting and forming are also analyzed. 17 reference cards (Nos. 33 to 49) are appended to explain problems pertaining to the state of stress of plastically deformed metal. These cards are the continuation of cards presented in collection No. 79 of the MVTU, 1957. No personalities are mentioned. References accompany most of the articles.

TABLE OF CONTENTS:

POPOV, Ye.A., kand.tekhn.nauk

Generalized principles of the theory of sheet stamping. [Trudy] MVTU no.13:150-161 '51. (MIRA 12:7)
(Sheet-metal work)

POPOV, Ye.A.

Forms of abraded coastline, consisting of Flysch. Trudy Inst. okean. 7:160-166 '53. (MLRA 7:3)

(Coast changes) (Flysch)

POPOV, Ye.A.

Seaward movement of wind-caused high tides in the beach zone.
Trudy Okean.kom. 1. 98-104 '56. (MLRA 10:2)
(Seashore)

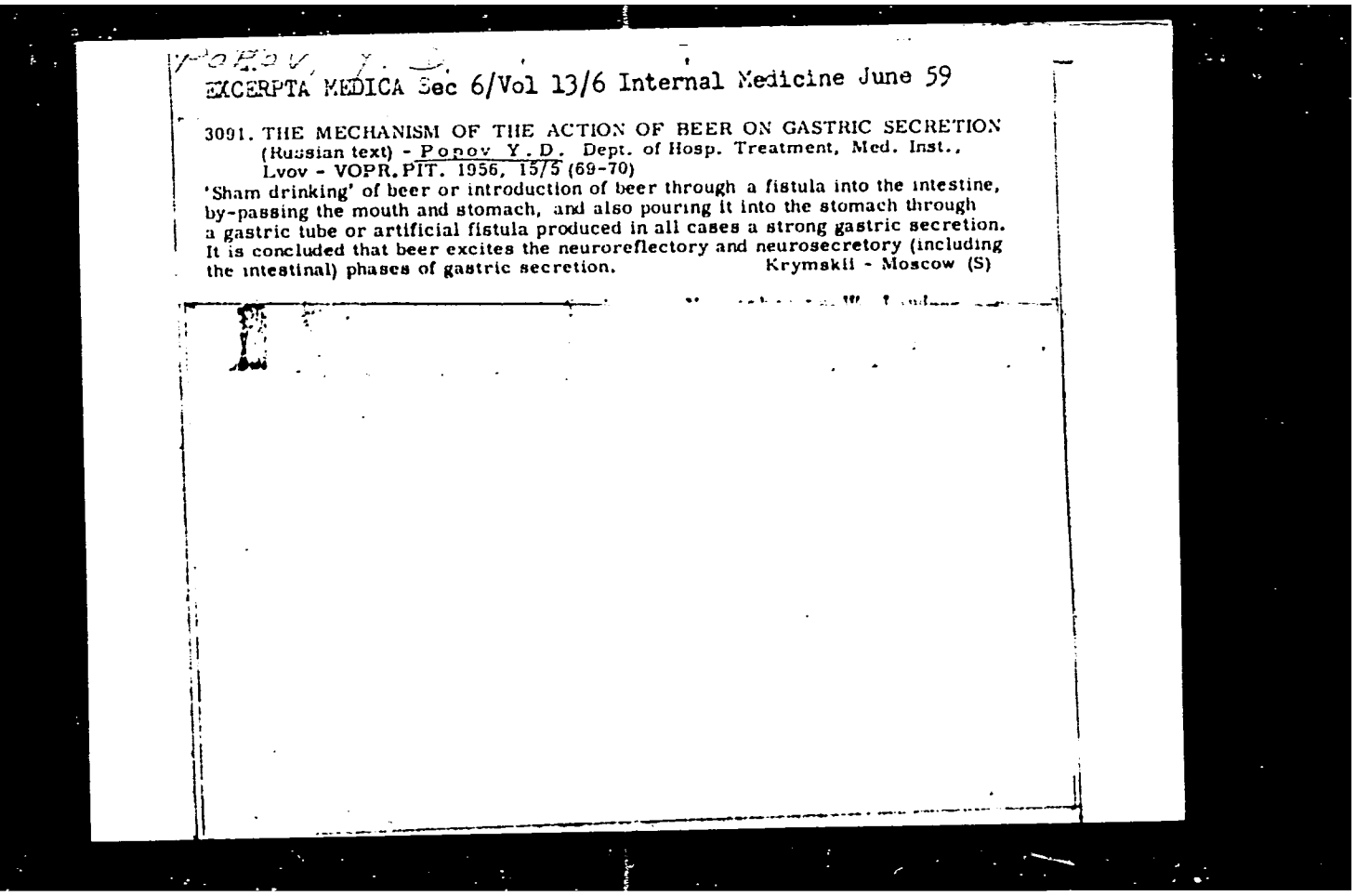
BOGOYAVLENSKIY, K.N.; GRIGOR'YEV, A.K.; POPOV, Ye.B.

Manufacture of thin-walled shapes from titanium and its alloys on a shape-bending machine. Trudy LPI no.222:148-150 '63.
(MIRA 16:7)

(Titanium) (Sheet-metal work)

MORALEVICH, A.G., inzh.; POPOV, Ye.D., inzh.

More about hydraulic pumps of E-153 excavators. Mekh. stroi. 17 no.12:19-20 D '60. (MIRA 13:12)
(Excavating machinery) (Pumping machinery)



POPOV, Y. D.

EXCERPTA MEDICA Sec 6/Vol 13/6 Internal Medicine June 59

3091. THE MECHANISM OF THE ACTION OF BEER ON GASTRIC SECRETION (Russian text) - Popov Y. D. Dept. of Hosp. Treatment, Med. Inst., Lvov - VOPR. PIT. 1956, 15/5 (69-70)

'Sham drinking' of beer or introduction of beer through a fistula into the intestine, by-passing the mouth and stomach, and also pouring it into the stomach through a gastric tube or artificial fistula produced in all cases a strong gastric secretion. It is concluded that beer excites the neuroreflectory and neurosecretory (including the intestinal) phases of gastric secretion. Krymskii - Moscow (S)

POPOV Ye.F.

OBRAZTSOV, B.M.; POPOV, Ye.F., professor, doktor tekhnicheskikh nauk, retsenzent; BAHIN, I.A., inzhener, nauchnyy redaktor; SOKOLOVA, L.V., tekhnicheskiy redaktor.

[Installation of ship pipelines] Montazh sudovykh truboprovodov. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 111 p. (MLRA 7:11)
(Marine pipe fitting)

FOPOV, Ye. G.

"Horsebreeding on a leading collective farm."

SO: Konevodstvo, Vol. 23, No. 2, 1953

POPOV, Ye. G.

VASIL'YEV, A.V., kandidat tekhnicheskikh nauk; POPOV, Ye.G., kandidat tekhnicheskikh nauk.

Test results of the KD-35 tractor undercarriage. Avt. trakt. prom. no.12:8-12 D '53. (MLRA 6:12)

1. Nauchno-issledovatel'skiy avtotraktornyy institut.
(Tractors--Testing)

POPOV, Ye.G.

The TST-40 and TST-60 trailer tractors. Biul. tekh.-ekon. inform. no.3:32-35 '58. (MIRA 11:6)
(Caterpillar tractors)

POPOV, Ye. G. Cand. Tech. Sci.

Dissertation: "Heat Balance and Intensity of Snow Thawing." Central Inst of Weather Forecasting, 19 Nov 47.

SO: Vechernyaya Moskva, Nov, 1947 (Project #17836)

AMS

SYNOPTIC ANALYSIS AND FORECASTING

3.5-83

551.509.39:551.579

Popov, E.G., O raschete poverkhnostnogo zaderzhaniia vody v rechnykh basseinakh dlia tselei prognoza stoka. (On the calculation of surface water tetention in river basins for runoff forecasting.) Meteorologiia i Gidrologiia, No. 1:52-60, Sept. 1950. 5 figs. 27 equations. DLC- Descriptions of a method of calculation. The first stage is the computing of the integral curve of runoff, after that the curve of water emission coefficient is defined. The verification of the method was made for Vishera River near Mitrakovo and showed good results. Subject Headings: 1. Runoff forecasting 2. Surface water retention 3. River basins. - N.T.Z.

3

A.6-25 551.501(02)

Popov, E. G., N. A. Belinskii. Morskie gidrometeorologicheskie informatsii i prognozy. [Review of "Marine hydrometeorological reports and forecasting," by N. A., Belinskii.] *Meteorologiia i Gidrologiia*, No. 4:53-54, Dec. 1950. DLC—A student's manual summarizing recent Soviet advances in hydrometeorology, is reviewed. In spite of some shortcomings, the reviewer recommends it as a manual for students and as a handbook for marine forecasters. (*See item* No. 3.2-46 in Feb. 1952 *Meteorological Abstracts.*) *Subject Headings:* 1. Observers' manual 2. Marine forecasting 3. Reviews I. Belinskii, N. A.—*A.M.P.*

2

POPOV, Ye. G.

Bases for calculating the detention of snow melts in river basins.
Trudy TSIP no.24:10-42 '51. (MIRA 11:4)
(Rivers—Water supply) (Snow)

POPOV, Ye. G.

PA 237T65

USSR/Geophysics - Absorption of Water Dec 52

"Approximate Calculation of the Intensity of Water Seepage Into Soil," Cand Tech Sci Ye.G. Popov, Moscow Central Inst of Forecasting

"Meteorol i Gidrol" No 12, pp 32-36

Derives approx formula reflecting principal peculiarities of the absorption of water in soil. The clear phys significance of the parameters in the formula make it useful in hydrological calcns and forecasts, particularly in the case of small basins.

237T65

POPOV, Ye.G. (Editor)

"Problems of Hydrological Weather Forecasts," Trudy Tsentral'nogo Instituta Prognozom (Works of the Central Institute of Weather Forecasts), No 30(57), 1953, Leningrad (Editor: Ye.G. Popov).

POPOV, Ye.G.

[Hydrological prognoses and their importance for the national economy] Gidrologicheskie prognozy i ikh znachenie dlia narodnogo khoziaistva. Leningrad, Gidrometeoizdat, 1954. 95 p. (MIRA 8:3D)

POPOV, Yevgeniy Grigor'yevich; SHATILINA, M.K., red.; FLAUM, M.Ya., tekhn. red.

[Analysis of the runoff formation of plains rivers] Analiz formirovaniia stoka ravninnykh rek. Leningrad, Gidrometeor. izd-vo, 1956. 130 p. (MIRA 11:7)

(Rivers) (Runoff)

Popov, EG.

12

Book—2159. Popov, E. G., Hydrological forecasts [Gidrologicheskie prognozy], Leningrad, Gidrometeoizdat, 1957, 460 pp. $1.50. 10

This is a textbook for technical schools, of great interest for hydrologists. Its chapters: Hydrology and importance of forecasts. Available data on water resources. Amount of basic data for forecasts. Fundamentals for elaboration and evaluation for forecasts. Surface runoff and laws of its formation. Short-term forecasts based on propagation time. Construction of runoff diagrams. Long-term forecasts for spring flood in flat lands. Runoff forecast in mountains. Low water forecasts. Forcast of ice regime—freezing and breaking time. Hydrological information for water control administration. Many selected examples and diagrams illustrate the book.

S. Kolupaila, USA

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PHASE I BOOK EXPLOITATION SOV/2593

Moscow. Tsentral'nyy institut prognozov

Voprosy gidrologicheskikh prognozov (Problems in Hydrological Forecasting) Moscow, Gidrometeoizdat, 1959. 122 p. (Series: Its Trudy, vyp. 84) Errata slip inserted. 900 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR.

Eds. (Title page): V. V. Piotrovich and V. I. Sapozhnikov; Ed. (Inside book): M. I. Sorokina; Tech. Ed.: I. M. Zarkh.

PURPOSE: This issue of the Institute's Transactions is intended for hydrologists and meteorologists.

COVERAGE: Individual articles discuss the problem of evaluating the methods and the verification rate of hydrological forecasts, the forecasting of high-water discharge and ice phenomena on rivers and water reservoirs, and the use of intake curves in forecasting. No personalities are mentioned. References accompany each article.

Card 1/3

POPOV, Ye.G.

First session of the Commission for Hydrological Meteorology of the World Meteorological Organization. Meteor. i gidrol. no.10:63-64 O '61. (MIRA 14:9)

(Hydrometeorology--Congresses)

POPOV, Yevgeniy G.

"Hydrological forecasts and flood-warnings service in the USSR"

report to be submitted for the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas - Geneva, Switzerland, 4-20 Feb 63.

POPOV, Yevgeniy Grigor'yevich; PARSHIN, V.N., otv. red.; ROSHCHINA, V.V., red.; ZARKH, I.M., tekhn. red.

[Problems in the theory and practice of predicing streamflow] Voprosy teorii i praktiki prognozov rechnogo stoka. Moskva, Gidrometeoizdat, 1963. 394 p. (MIRA 16:7)
(Runoff)

POPOV, Ye.G.; BORZAKOVSKAYA, A.V.

Using plurality correlation of the water level prediction in large rivers. Trudy TSIP no.117:33-40 '63. (MIRA 16:7)
(Amur River--Hydrology)

POPOV, Ye.G., prof. (Moskva)

Landslide on the Zeravshan River. Priroda 53 no.7:111-114 '64.
(MIRA 17:7)

POPOV, Ye.G., doktor geograf. nauk, prof.; CHEBOTAREV, A.I., doktor tekhn. nauk

A mountain landslide and the opening of a passage for the water in the Zeravshan Valley. Meteor. i gidrol. no.9: 37-42 S '64. (MIRA 17:9)

1. TSentral'nyy institut prognozov i Gosudarstvennyy gidrologicheskiy institut.

POPOV, Ye.G., prof.; PARSHIN, V.N., doktor geogr. nauk

The 1965 low water of rivers in Central Asia and some problems of forecasting the flow of mountain rivers. Meteor. i gidrol. no.2:13-18 F '66. (MIRA 19:1)

1. Gidrometeorologicheskiy nauchno-issledovatel'skiy tsentr SSSR. Submitted November 3, 1965.

BULANZHE, Yu.D.; POPOV, Ye.I.

Quartz gravimeter for determination of supporting gravimetric points. Trudy Geofiz. inst. no.30:240-249 '55. (MLRA 9:6)
(Gravimeter)

P[illegible]OV, Ye. I.= "Investigation of quartz systems of gravimeters." Acad Sci USSR. Geophysics Inst. Moscow, 1956. (Dissertations for the Degree of Candidate in Physicomathematical Sciences).

SO: Knizhnaya Letopis' No. 22, 1956

AUTHOR: Popov, Ye. I. 49-5-12/18

TITLE: Experience gained in miniaturisation of the quartz system for gravimeters of the Norgard and CH-3 types. (Opyt umen'sheniya razmerov kvartsevoy sistemy k gravimetram tipa Norgarda i SN-3).

PERIODICAL: "Izvestiya Akademii Nauk, Seriya Geofizicheskaya" (Bulletin of the Ac.Sc., Geophysics Series), 1957, No.5, pp. 670 - 672 (U.S.S.R.)

ABSTRACT: Small size quartz systems were produced in two variants. Their general appearance and the individual components are shown in the photographs, Figs. 1 and 2. The second variant is of a simpler design and can be produced more easily. In the operating state the elastic systems are filled with a compensating liquid, consisting of 1 to 2 cm^3 of purified MK-8 oil. The scattering in the measurements effected with the here described small size systems are of the same order of magnitude as they are for Norgard and CH-3 gravimeters and this also applies to the accuracy. The damping of the miniaturised systems is better than the Norgard gravimeter systems and particularly for the CH-3 gravimeter. The quality of the image of the indices in the field of vision of the microscope and their brightness

Card 1/2

Popov, Ye. I.

AUTHOR: Popov, Ye. I. 49-6-14/21

TITLE: Investigation of the possibility of reducing the temperature coefficients of quartz gravimeters by changing over to glass with low thermoelastic coefficients. (Issledovaniye vozmozhnosti umen'sheniya temperaturnykh koeffitsiyentov kvartsevykh gravimetrov putem perekhoda k steklu s malym termoelasticheskim koeffitsiyentom).

PERIODICAL: "Izvestiya Akademii Nauk, Seriya Geofizicheskaya" (Bulletin of the Ac.Sc., Geophysics Series), 1957, No.6, pp. 808-812 (U.S.S.R.)

ABSTRACT: Change of the elastic properties with the temperature is one of the main drawbacks of quartz glass when used as a material for elastic gravimeter systems. The error caused in a system made completely of quartz glass in the case of a change in the temperature by 1 C is 500 to 1000 times as large as the required metering accuracy. For reducing the temperature disturbances a temperature compensation is usually applied and also thermostating. Such measures are sufficiently effective in the case of a continuous change in the external temperature. However, it does not give satisfactory results in the case of sudden temperature changes. In view of the fact that various glasses have temperature

Card 1/4

Investigation of the possibility of reducing the temperature coefficients of quartz gravimeters by changing over to glass with low thermoelastic coefficients. (Cont.)

coefficients of the shear moduli differing in magnitude and sign, the author believed that it may be possible to produce a glass with a zero temperature coefficient of elasticity. However, such a glass would have to be sufficiently stable and it would have to satisfy the various requirements to be met in gravimeter systems. For that reason it was considered advisable to determine first to what extent the thermoelastic coefficients differ in various specimens of quartz glass and in Table 2, p.809, the values of the temperature coefficient of the shear modulus obtained by a number of authors are summarised and it can be seen that the values of the coefficients differ by up to 15%. The measuring accuracy did not exceed 5% and in all cases quartz glass specimens were used which were made from pure grades of rock crystal. The author considered that the deviations in the thermoelastic coefficients in industrially produced glasses would be larger still and amount to 30 to 40% and, therefore, it might be possible to produce a temperature compensated elastic system made up of various specimens of quartz glass. The experiments were carried out

Investigation of the possibility of reducing the temperature coefficients of quartz gravimeters by changing over to glass with low thermoelastic coefficients. (Cont.)

with highly transparent glass produced by the State Porcelain Works and also individual specimens of glass available in the laboratory. For carrying out the experiments, elastic systems of the type of a Norgard gravimeter and a CH-3 gravimeter were produced, the threads of which were made of the investigated specimens of quartz glass, as shown in Fig.1, p.809. A sketch of the instrument for determining the temperature coefficients is shown in Fig.2, p.810. For obtaining more detailed information on the features of manufacture and on the behaviour of elastic systems of glasses which differ appreciably in composition from quartz glass, the investigations were extended to elastic systems produced from molybdenum glass, which has a high stability against reverse crystallisation during repeated heating cycles. On the basis of the obtained results it can be stated that reduction of the temperature coefficients of gravimeters by changing over to glass with lower thermo-elastic coefficients is likely to meet insurmountable difficulties, since it would be necessary to introduce considerable quantities of admixtures which will bring about

Investigation of the possibility of reducing the temperature coefficients of quartz gravimeters by changing over to glass with low thermoelastic coefficients. (Cont.)

intensified deglassification during repeated heating and result in a reduction of the strength and also an increase in the creep speed. Acknowledgments are made to M. S. Molodenskiy and Yu D. Bulanzhe for carrying out a considerable part of the experimental work.
There are 3 figures, 4 tables and 4 Slavic references.

SUBMITTED: November 13, 1956.

ASSOCIATION: Institute of Physics of the Earth, Ac.Sc., U.S.S.R. (Akademiya Nauk SSSR Institut Fiziki Zemli).

AVAILABLE: Library of Congress

Card 4/4

49-58-5-10/15

AUTHOR: Popov, Ye. I.

TITLE: New Experimental Data on Shifting of Zero Point of Twisted Quartz Thread Type Gravimeters (Novyye eksperimental'nyye dannyye o spolzanii nul'punkta kvartsevykh gravimetrov, osnovannykh na ispol'zovanii uprugikh svoystv zakruchennykh nitey)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 5, pp 655-663 (USSR)

ABSTRACT: There are two possibilities when stability of zero point of the quartz thread gravimeter is considered. First, it can be affected by external factors, which are comparatively easy to determine, and second, it can also be affected by the processes taking place inside its elastic parts, which is a more difficult problem to solve. The Norgard and SI-3 types of gravimeters were used for the experiments. The following characteristics of shifting of zero point were observed:

1. Shifting always tends to increase the readings, i.e. the angle of twist becomes smaller.
2. With new apparatus up to 2-4 months old, the shifting of zero point appears to be greater, becoming normal later.
3. The shifting depends on temperature. However, at $0^{\circ}C$ it is negligible. It increases rapidly at $30-40^{\circ}C$.

New Experimental Data on Shifting of Zero Point of Twisted Quartz

In order to maintain a steady temperature all parts of the gravimeters are usually placed in a liquid. The drawback of doing this is that the liquid becomes dirty and deposits sediments on various parts. Therefore a special type of apparatus was built for experiments, containing no liquid (Fig. 1). It consisted of a rod made of quartz glass attached to the middle part of a thread. The thread was twisted by means of a spring at one of its ends. Two mirrors were employed: one fixed to the spring (movable), another one (static) to the rod. The temperature during the testing was maintained uniform with variations of 0.005°C. The atmospheric pressure was corrected. It can be shown by calculation that the shifting of zero point is being caused by variations of shear coefficient or plastic deformation of the twisted thread. This was tested for various effects by the following experiments.

Duration effect. Three different, newly made apparatus were subjected to observations from the moment of initial twist of the thread. The purpose of the experiment was to show the character of shifting of zero point in the course of time, i.e. to find out the behaviour of the thread. The results were tabulated (Table 1). Two periods were disting-

New Experimental Data on Shifting of Zero Point of Twisted Quartz.

uished: first, when the shifting was rather large and unsteady, and second, when it became settled after some 80 - 100 hours.

Effect of type of quartz. A number of threads were specially made each of different kinds of quartz glass. All were subjected to prolonged testing with observations started not earlier than 80 hours. The results were again tabulated (Tables 2 and 3). It was shown that the kind of quartz makes no difference as far as the angle of twisting is concerned. But the best standard of transparent quartz should be used for strength.

Effect of stresses in thread.

The effect of load on producing creep in the glass was the purpose of the experiment. As it is very difficult to define all stresses in the thread (stretching, twisting, bending - all acting simultaneously) stretching only was investigated. Two experiments were carried out. A device shown on Fig.3 was produced for the first experiment, in which one end of the thread was attached to the spring and the other to the micro-screwing attachment. While turning the screw, thus

New Experimental Data on Shifting of Zero Point of Twisted Quartz.

stretching the thread, its twisting angle was measured. The results (Fig.4) showed how this angle behaves in relation to the variations of stretching coefficient. The second experiment was made to show how far the thread can be stretched without affecting shifting of zero point. At first an angle of shifting was found for a given stretch. Then the thread was loosened. The change of angle was observed while the thread was again subjected to stretching from nil to the previously determined magnitude. No appreciable difference in angle of shifting could be observed.

Effect of angle of twisting.

The threads made of one kind of quartz were used for various experiments where the angle of twisting was changed from 110° to 1386°. The results (Table 4) showed that the magnitude of shifting of zero point did not change noticeably.

Effect of diameter and contour of thread.

Several experiments were carried out with threads of different diameters ranging from 10 to 150μ, and with one thread of tubular cross-section. It was found that thin threads of diameter up to 40μ caused a considerable shifting of zero point and that they represent a low resistance. The tubular thread showed no exceptional properties. Results were tabu-

lated (Table 5) and correlated (Fig.5).

Effect of temperature

The tests were carried out with Norgard and SI-3 gravimeters not immersed into liquid. The temperature was measured twice: before and after setting the apparatus. The observations showed that shifting of zero point increases rapidly during the first 8-12 hours of an increase of temperature, to become later even more. When the temperature dropped, the opposite effect was observed. The results of testing are shown in Table 6.

Effect of preliminary twisting

The experiments were carried out in the following manner: the thread was twisted more than usual and left in such a state for several hours. Then it was released to the working position. The results did not show discrepancies in shifting from a normal method of observation. However, it was found that the first period of shifting was shortened to 5-10 hours instead of 80-100 hours (Table 7 and Fig.6).

Effect of time and temperature

The observations made at room temperature of 28-30°C soon after the apparatus were removed from being kept for some time at the three different ranges of temperature: -50° to